

Claims

1. Littrow grating with a multiplicity of parallel  
5 diffraction structures succeeding one another periodically,  
which are arranged on a support defining a base area and  
each incorporate a blaze flank inclined towards the base  
area substantially at the Littrow angle and a counter-  
flank, wherein the blaze flank and the counter-flank form  
10 at the apex of a diffraction structure an apex angle which  
is less than  $90^\circ$ ,

characterised in that

15 the counter-flank (6) comprises at least two substantially  
plane area sections (7, 8) which, bordering one another and  
inclined relative to one another by an angle of inclination  
( $\beta$ ), extend parallel with the extension direction of the  
diffraction structure (3), wherein due to the inclination  
20 of the at least two area sections (7, 8) relative to one  
another the counter-flank (6) all in all exhibits a concave  
surface viewed from the light incidence side.

2. Littrow grating according to claim 1, characterised in  
25 that the area sections (7, 8) exhibit a width ratio of 0.5  
to 2 measured normal to the extension direction of the  
diffraction structures (3).

3. Littrow grating according to claim 1 or 2,  
30 characterised in that the angle of inclination ( $\beta$ ) lies in  
the range from  $90^\circ$  to  $150^\circ$ .

4. Littrow grating according to one of the preceding claims, characterised in that it consists of quartz glass.

5. Littrow grating according to one of the preceding  
5 claims, characterised in that it comprises a coating increasing the reflectivity.

6. Littrow grating according to claim 5, characterised in that the coating is an aluminium coating.

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7. Littrow grating according to one of the preceding claims, characterised in that it comprises a dielectric layer system.

15 8. Littrow grating according to claim 7, characterised in that the dielectric layer system comprises layers of  $\text{Al}_2\text{O}_3$  and  $\text{MgF}_2$ .

9. Littrow grating according to claim 7, characterised in  
20 that the dielectric layer system comprises layers of  $\text{LaF}_3$  and  $\text{MgF}_2$ .

10. Littrow grating according to one of the preceding claims, characterised in that the blaze flank (5)  
25 comprises, measured normal to the extension direction of the diffraction structures (3), a minimum width of  $g \cos(\theta)$ , where  $g$  designates the grating period of the Littrow grating and  $\theta$  the Littrow angle.

30 11. Use of a Littrow grating according to one of claims 1 to 10 in a diffraction order of the incident light wavelength above or equal to the 15th diffraction order.

12. Use of a Littrow grating according to one of claims 1 to 11 for the diffraction of UV light (9, 10, 11, 12) with a wavelength that is less than 250 nm.